UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,669	02/27/2004	Norman Paul Jouppi	200315363-1	7567

22879 7590 08/19/2009

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
3404 E. Harmony Road
Mail Stop 35
FORT COLLINS, CO 80528

EXAMINER	
OLSEN, LIN B	

ART UNIT	PAPER NUMBER
3661	

NOTIFICATION DATE	DELIVERY MODE
08/19/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
jessica.l.fusek@hp.com

Office Action Summary	Application No.	Applicant(s)	
	10/789,669	JOUPPI, NORMAN PAUL	
	Examiner	**Art Unit**	
	LIN B. OLSEN	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-7,9,10,12,13,15,16,18-22 and 24-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-3,5-7,9,10,12,13,15,16,18-22,24-28 and 30-35* is/are rejected.

7)☐ Claim(s) *29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

After the communication of July 13, 2009, Claims 1-3, 5-7, 9-10, 12-13, 15-16, 18-22, and 24-35 are pending in the present application. Of these, claims 1, 7, 13 and 19 are independent.

The objection to claim 27 is sustained.

Applicant's arguments, see page 7 filed July 13, 2009 with respect to the rejection(s) of claim(s) 1-3, 5-7, 9-10, 12-13, 15-16, 18-22, and 24-31 under 35 USC 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sias and others.

Claim Objections

Claims **15 and 21** are objected to because it is unclear what is meant by "the computer/transceiver for autonomously moving the surrogate to regain wireless control occurs after…". Occurs is not a logical verb to be associated with computer/transceiver.

Claim **27** is objected to because of the following informalities: It is suggested that "the desired rate" be replaced with "the desired data rate" to utilize proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims **3, 32 and 33** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims recite that the surrogate “loiters” near a location where the unsuitable signal degradation was detected. The Examiner is unable to find an instance in the specification where the surrogate loiters. Since claims 15 and 30 recite that the surrogate remains stationary, the examiner requests clarification on the specification’s support for loitering.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims **13 and 30** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation “loss” in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim 30 recites the limitations “the loss” and “the location” in line 3. There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **1-2, 13, 19-21, 30, and 32-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over "Mobile Robot Survival", Fred R. Sias & Frank Heckendorn, Southeastcon'88, IEEE Conference Proceedings, pp. 497-501 (hereafter referred to as Sias). Sias describes a robot working in dangerous conditions that is initially remotely controlled, but might lose the wireless signal controlling it.

Regarding independent **claims 1 and 13** which are the method claim and a system capable of executing the method**, A method of mobile device control comprising:**

moving a surrogate under wireless control by a user; reads on Sias, p. 500, 2nd ¶ under "Loss of Control Tether" where robots operated under radio and/or microwave control links are described.

during the moving, detecting unsuitable degradation of wireless communications of the wireless control; and - Sias, p 500, 3rd ¶ under "loss of Control Tether" - Logic included to stop the motion should signal strength drop too seriously

in response to the detecting and while the surrogate is still receiving the wireless communications, autonomously moving the surrogate to provide suitable wireless communications of the wireless control. - reads on Sias p. 500, 4th ¶ under "Loss of Control Tether" where providing sufficient intelligence for the robot

to retrace its immediate past movement is described. While ¶ 4 speaks to regaining signal when control link is lost, since ¶ 3 speaks of detecting drop of signal strength, it would have been obvious to one of ordinary skill in the art at the time of the invention to chose to take the action of ¶ 4 after stopping for a specified time because of a weak signal, since this capability would improve the utilization of the robot.

Regarding claim **2, The method as claimed in claim 1 additionally comprising:**

autonomously moving the surrogate along a previously determined route. Reads on Sias p. 500, 4th ¶ under “Loss of Control Tether” where the previously determined route is that remembered by the robot from when under wireless control.

Regarding **claim 19, A mobile telepresencing system comprising:** The recitation of telepresencing in claim 7 has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause. Kropa v. Robie, 88 USPQ 478 (CCPA 1951).

a surrogate movable under wireless control by a user; and - reads on Sias p. 500, 2nd ¶ under “Loss of Control Tether” where robots operated under radio and/or microwave control links are described.

a computer/transceiver system for determining when the wireless control is lost and - Sias p 500, 3rd ¶ under “loss of Control Tether” - Logic included to stop the

motion should signal strength drop too seriously - **responsive to the determining, autonomously moving the surrogate to an area not currently receiving adequate coverage of the wireless control, but in which the surrogate previously experienced adequate coverage of the wireless control, to regain adequate coverage of the wireless control. -** reads on Sias p. 500, 4th ¶ under "Loss of Control Tether" where providing sufficient intelligence for the robot to retrace its immediate past movement is described. While ¶ 4 describes retracing its previous steps in order to regaining signal when control link is lost, the area retraced must have been not currently receiving adequate coverage since the robot did not stop to recover signal there. Similarly, the path that is retraced is one on which the robot previously received adequate signal.

Regarding **claim 20, The system as claimed in claim 19 additionally comprising:**

the computer/transceiver system for autonomously moving the surrogate along at least one of a previously determined route, a distance, a destination, a direction, or a combination thereof. - reads on Sias p. 500 4th ¶ under "Loss of Control Tether" where the robot autonomously moves along the previously taken route.

21. The system as claimed in claim 19 wherein:

the computer/transceiver system for determining degradation of the wireless control to a threshold level; - reads on Sias p. 500 3rd ¶ under "Loss of

Control Tether" where the vehicle is stopped should the signal strength drop too seriously.

the computer/transceiver system for autonomously moving the surrogate to regain wireless control occurs after a period of time. - reads on Sias, p. 500, 3rd ¶, where time to allow the robot to roll slightly or turn the antenna are suggested.

Regarding **claim 30, The system of claim 13 wherein the computer/transceiver system is configured to configure the surrogate to remain stationary near the location for the non-zero amount of time following the loss of the wireless control. -** Sias p 500, 3rd ¶ under "loss of Control Tether" includes logic to stop the motion should signal strength drop too seriously.

Regarding **claim 32, The system of claim 13 wherein the computer/transceiver system is configured to detect loss of the wireless control, - reads on** Sias p 500, 3rd ¶ under "loss of Control Tether" where logic is included to stop the motion should signal strength drop too seriously **- configure the surrogate to loiter for the non-zero amount of time following the loss of the wireless control near a location at which the loss of the wireless control was detected,** - reads on Sias , p. 500, 3rd ¶ where time to allow the robot to roll slightly or turn the antenna are suggested. - **and monitor for return of the wireless control during the non-zero amount of time.** - reads on Sias p. 500, 4th ¶ which speaks to regaining signal when

control link is lost, since ¶ 3 speaks of detecting drop of signal strength, it would have been obvious to one of ordinary skill in the art at the time of the invention to only execute the backtracking if the signal is not reestablished while remaining in place. Since this capability would improve the utilization of the robot.

Regarding **claim 33, The system of claim 19 wherein the computer/transceiver system is configured to loiter in the area for the wireless control to return. -** - reads on Sias, p. 500, 3rd ¶ where time to allow the robot to roll slightly or turn the antenna are suggested the rolling or turning being interpreted as loitering.

Claims **3 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sias as applied to claim 1 above, and further in view of U.S. Patent Pub. No. 2004//0249519 to Frink (Frink). Frink is concerned with remote controlled aircraft and actions in them when the control communication is lost.

Regarding claims **3 and 15,** which are the method claim and a system capable of executing the method, **The method as claimed in claim 1 wherein:**

autonomously moving the surrogate to provide suitable wireless communications of the wireless control occurs after passage of a period of time following the detecting of the degradation; and reads on Sias , p. 500, 3rd ¶ where time to allow the robot to roll slightly or turn the antenna are suggested.

the method further comprises after the detecting of the unsuitable degradation, the surrogate loitering near a location where the unsuitable degradation was detected during the passage of the period of time. While Sias suggests having the robot stay in approximately the same place for a period of time, it suggests that the robot stay relatively stopped, not loitering. Frink is concerned with a flying robot (UAV) that usually operates under remote control but will operate in UAV mode when the remote signal is unavailable. In paragraph 21, Frink suggests that the UAV loiter in a predetermined pattern to allow the operator to, for instance, change batteries in the transmitter so that communication can be reestablished. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the robot use a loiter pattern rather than remain stationary so that the chance of catching the communication signal is improved by applying the known technique to a similar device to yield similar results.

Claims **5-6, 16 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sias as applied to claim 1 above, and further in view of U.S. Patent No. 6,450,955 to Bartsch (Bartsch). Bartsch is concerned with a home cleaning robot that is guided through a route that it learns.

5. The method as claimed in claim 1 wherein:

moving the surrogate under wireless control includes logging forward motion using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof. This limitation does not read on

Sias which does not go into that much detail, but does read on Bartsch col. 22 lines 10-23 where the learning mode of the robot is described including the output of the drive wheel motor and application specific sensor being recorded in memory. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate this feature in Sias, since Sias' robot retraced its immediate past movements (Last sentence of 4th ¶ on 1st column of page 500), so must have recorded them in some way.

Regarding **claims 6, 16 and 18** which are the method claim and systems capable of executing the method**, The method as claimed in claim 1 wherein:**

autonomously moving the surrogate uses logged information of forward movement using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof; and - Sias is silent on the method of autonomous movement, but Bartsch teaches training a robot, col. 4 lines 29-36, which involves among other methods, recording encoders from motors or wheels, recording images of the environment, and recording location of beacons. The robot assembles these data into a map, col. 6 lines 34-60, that is used to guide the robot when moving autonomously.

autonomously moving the surrogate uses waypoints back along a forward movement path for backtracking movement. - Sias is silent on the method of autonomous movement, but Bartsch at col. 4, lines 32-34 teaches recording images and sonar responses which are incorporated in maps col. 6 lines 34-40 that guide the robot moving autonomously. It would have been obvious to one of ordinary skill in the art at

the time of the invention to use Bartsch's map-making capabilities in implementing Sias autonomous movement to retrace a path.

Claims **7, 9 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sias as applied to claim 1 above, and further in view of "The Ominous Mail Delivery Robot" http://everyting2.com/title/The+Ominous+Mail+Delivery+Robot (Mail). Mail describes an autonomous mail delivery robot that continually indicates its presence.

Regarding independent claim **7, A method of mobile telepresencing comprising:** The recitation of telepresencing in claim 7 has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause. Kropa v. Robie, 88 USPQ 478 (CCPA 1951).

moving a surrogate under real-time wireless control by a user; reads on Sias p500, 2nd ¶ under "Loss of Control Tether" where a robot is controlled via a control link.

autonomously moving the surrogate to an area with adequate wireless coverage to regain wireless control when the wireless control is lost for a period of time; and reads on Sias p 500 4th ¶ under "Loss of Control Tether".

while the surrogate is autonomously moving, activating a human perceptible indicator which is perceptible to humans in the presence of the surrogate. Sias is silent about activating an indicator when under autonomous control. However, Mail refers to an early mail delivery robot that continually made a sound to warn humans that it was nearby and a different sound to notify them of a mail pick-up. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the known technique of warning humans when a robot was moving autonomously to the moving Robot of Sias to improve a similar device in a known way with a predictable result.

Regarding **claim 9, The method as claimed in claim 7 wherein:**

losing wireless control includes degradation of the control to a threshold level; reads on Sias p. 500 3rd ¶ under “Loss of Control Tether” where the vehicle is stopped should the signal strength drop too seriously.

autonomously moving the surrogate to regain wireless control occurs after a period of time. Reads on Sias, p. 500, 3rd ¶, where time to allow the robot to roll slightly or turn the antenna are suggested.

Regarding **claim 31, The method of claim 7 wherein the surrogate comprises the human perceptible indicator.** – As indicated in Mail, the mail delivery robot emitted a specific sound while moving autonomously, hence it (or its speaker) was the human perceptible indicator.

Claims **10, 12 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sias/Mail as applied to claim 7 above, and further in view of Bartsch.

Regarding **claims 10 and 34, The method as claimed in claim 7 wherein:**

autonomously moving the surrogate includes:

backtracking while measuring distance and avoiding collisions by the surrogate;

stopping the surrogate for an obstacle; and

resuming backtracking after removal of the obstacle. - while Sias is silent on the details of moving autonomously, including whether the robot measures distance or avoids obstacles, Bartsch details, in col. 6 line 65 to col. 7 line 4, an example of a microprocessor-based control and mapping system that senses the distance traveled by the robot and a change in direction. Further in col. 7 lines 32- 34, obstruction sensors to sense a wall, column, or like obstruction and the distance to the obstruction are detailed. - Bartsch teaches that on detecting an obstacle, the robot stops and then turns to avoid the obstacle col. 22, lines 35-42. It further states that variations on this (such as waiting for removal of the obstacle) are also possible. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the features of Bartsch's robot in the Sias' device, because it would implement known techniques to improve a similar robot in the same way to track it's position and avoid obstacles as it moves back to the known good signal area.

Regarding **claim 12, The method as claimed in claim 7 wherein:**

autonomously moving the surrogate to backtrack uses logged information of forward movement using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof; - Sias is silent on the method of autonomous movement, but Bartsch teaches training a robot, col. 4 lines 29-36, which involves among other methods, recording encoders from motors or wheels, recording images of the environment, and recording location of beacons. The robot assembles these data into a map, col. 6 lines 34-60, that is used to guide the robot when moving autonomously

autonomously moving the surrogate to backtrack uses a slower speed than forward speed; and – Sias and Bartsch are silent on the relative speed of a backtracking robot vs. a robot being moved by remote control. The Examiner takes official notice that a machine executing a sequence of transmitted movement commands will move more quickly than a machine, observing its surroundings, determining its own sequence of actions and moving itself. Further, the condition of assuring that any humans near the device not be harmed implies slower motion. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

autonomously moving the surrogate uses waypoints back along a forward movement path for backtracking movement considering the slower speed of backtracking. - Sias is silent on the method of autonomous movement, but Bartsch at col. 4, lines 32-34 teaches recording images and sonar responses as waypoints which

are incorporated in maps col. 6 lines 34-40 that guide the robot moving autonomously. It would have been obvious to one of ordinary skill in the art at the time of the invention to use Bartsch's map-making capabilities in implementing Sias autonomous movement to retrace a path.

Claims **22, 24 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sias as applied to claim19 above, and further in view of "A System for Semi-Autonomous Tractor Operations" (Stentz). Stentz is concerned with a tractor that is either remote controlled or runs autonomously.

Regarding **claim 22 and 35, The system as claimed in claim 19 wherein:**

the computer/transceiver system for autonomously moving the surrogate includes:

backtracking means for measuring distance and avoiding collisions by the surrogate during backtracking;

stopping means for stopping the surrogate for an obstacle; and

means for resuming backtracking after removal of the obstacle.

Sias is silent on details of the backtracking. However, Stentz teaches using a semi-autonomous tractor for a manned tractor and measuring distance by wheel rotations. When the tractor moving autonomously detects an obstacle, it stops (p. 90. paragraph under Fig. 2). Subsequently, when the obstacle is removed or it determined that the tractor has misidentified the obstacle, it resumes travel. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Stentz's

response to an obstacle in the response mechanism of Sias since stopping for an obstacle on the ground is a safety response and applying a known technique to improve the safety of a mobile device is an improvement on the device.

Regarding **claim 24, The system as claimed in claim 19 wherein:**

the computer/transceiver system uses logged information of forward movement using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof for backtracking; - Sias /Stentz discloses the invention including logging movement information.

the computer/transceiver system provides a slower speed than forward speed for backtracking by the surrogate; and - The Examiner takes official notice that a machine executing a sequence of transmitted movement commands will move more quickly than a machine, observing its surroundings, determining its own sequence of actions and moving itself. Further, the condition of assuring that any humans near the device not be harmed implies slower motion. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

the computer/transceiver system uses waypoints back along a forward movement path for backtracking movement considering the slower speed of backtracking. – Stentz on page 87 the last full sentence of the page uses crop rows as waypoints for guidance when operating autonomously. It would have been obvious to

one of ordinary skill in the art at the time of the invention to combine these prior art elements according to known methods to yield predictable result of improved backtracking.

Claims **25-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sias as applied to claim 1 above, and further in view of U.S. Patent No. 6,377,875 (Schwaerzler). Schwaerzler is concerned with control of robots (UAV's) especially during loss of remote wireless control signals.

Regarding **claim 25, The method as claimed in claim 1 wherein:**

the detecting comprises comparing a performance parameter associated with the wireless communications with a threshold. – Sias does not provide detail on hoe to determine that the communication has degraded. Schwaerzler however, at col. 3 ln 35-40 indicates that the radio measures among other things that there is an existing signal but below a readable threshold. It would have been obvious to one of ordinary skill in the art at the time of the invention to use Schwaerzler's measurement technique as Sias' measurement technique since it a use of known technique to accomplish the goal of the device.

Regarding **claim 26, The method as claimed in claim 25 wherein:**

the detecting comprises determining that a current non-zero data rate at which the surrogate is successfully transmitting data via the wireless communications is less than a desired data rate. - These performance parameters

comprise a bandwidth and the threshold comprises an acceptable bandwidth. – in Schwaerzler, col. 3, l 44-45,the radio detects “input signal, but unreadable modulation”, where modulation is the measure of bandwidth.

Claim **27** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sias/Schwaerzler as applied to claim 26 above, and further in view of Stentz.

Regarding **claim 27, The method as claimed in claim 26 further comprising:**

prior to the detecting, wirelessly transmitting a video signal at or above the desired rate from the surrogate to the user. – Neither Sias nor Schwaerzler discuss video transmission as part of their robots. However, Stentz uses a robot that runs autonomously and/or under remote control that sends video back to the remote operator interface as shown in Fig. 4. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the video technique of Stentz to the known device of Sias which was ready fro further improvement to yield predictable results of a remote/autonomous robot that communicated both by video and radio.

Claim **28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sias/Mail/Bartsch as applied to claim 10 above, and further in view of Stentz.

Regarding **claim 28, The method as claimed in claim 10 further comprising:**

prior to the resuming of the backtracking, sensing removal of the obstacle; and

wherein the resuming is responsive to the sensing.

Bartsch adapts to finding obstacles by changing course in response to obstacles, rejoining the planned path via a different path. Bartsch does not stop at the obstacle. However, Stentz teaches that when the tractor moving autonomously detects an obstacle, it stops (p. 90. paragraph under Fig. 2). Subsequently, when the obstacle is removed or it determined that the tractor has misidentified the obstacle, it resumes travel. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Stentz's response to an obstacle in the response mechanism of Sias /Mail/Bartsch since stopping for an obstacle on the ground in an unmapped area such as that of Sias is a safety response and applying a known technique to improve the safety of a mobile device is an improvement on the device.

Allowable Subject Matter

Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 4,964,331 to Halevy for a remote control aircraft having autonomous capabilities; U.S. Patent Pub. No. 2005/0076242 to Breuer for details on detecting deterioration of wireless connection; and WO 98/51978 for a teleconferencing robot incorporating a video monitor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIN B. OLSEN whose telephone number is (571)272-9754. The examiner can normally be reached on Mon - Fri, 8:30 -5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lin B Olsen/
Examiner, Art Unit 3661

/Thomas G. Black/
Supervisory Patent Examiner, Art Unit 3661